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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,935	06/07/2004	Chen-Chih Huang	REAP0023USA	3934
27765	7590	04/05/2007		
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116			EXAMINER SINGH, RAMNANDAN P	
			ART UNIT	PAPER NUMBER
			2614	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/05/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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**Office Action Summary**

Application No.

10/709,935

Applicant(s)

HUANG ET AL.

Examiner

Ramnandan Singh

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 18 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date (i) Jun. 07, 2004, (ii) Aug. 10, 2005, (iii) Dec. 08,
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

2005

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy in Chinese has been filed in on Jul. 08, 2004.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-22 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10711294. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of the instant application is broader than claim 1 of the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Hauptmann et al [US 6,947,478 B1].

Regarding claim 1, Hauptmann et al teach an echo cancellation device for use in a full duplex communication system shown in Fig. 1, wherein the full duplex communication system comprises a transmitter (not shown) for transmitting a transmit signal and a receiver (not shown) for receiving a receive signal, the echo cancellation device comprising:

a filter (4) for outputting a filtering signal according to the transmit signal [Fig. 1; col. 2, lines 35-37];

an echo cancellation circuit (5) electrically coupled to the filter for outputting an echo cancellation signal according to the filtering signal [Fig. 1; col. 2, lines 41-44]; and

at least an echo cancellation resistor (6) electrically coupled to the transmitter, the receiver, and the echo cancellation circuit [Fig. 1; col. 2, lines 20-63].

Regarding claim 2, Hauptmann et al further teach the echo cancellation device, wherein the echo cancellation signal corresponds to the transmit signal [Fig. 1].

Regarding claim 3, Hauptmann et al further teach the echo cancellation device comprising a digital-to-analog converter (D/A) (2) [Fig. 1].

Regarding claim 5, Hauptmann et al further teach the echo cancellation device , wherein the filter further comprises an analog low pass filter [col. 1, lines 52-62].

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauptmann et al [US 6,947,478 B1] in view of Ishii et al [US 5,960,077].

Regarding claim 10, Hauptmann et al teach an echo cancellation

device for use in a full duplex communication system shown in Fig. 1, wherein the full duplex communication system comprises a transmitter (not shown) for transmitting a transmit signal and a receiver (not shown) for receiving a receive signal, the echo cancellation device comprising:

a filter (4) for outputting a filtering signal according to the transmit signal [Fig. 1; col. 2, lines 35-37];

an echo cancellation circuit (5) electrically coupled to the filter for outputting an echo cancellation signal according to the filtering signal [Fig. 1; col. 2, lines 41-44]; and

at least an echo cancellation resistor (6) electrically coupled to the transmitter, the receiver, and the echo cancellation circuit [Fig. 1; col. 2, lines 20-63].

Haupymann et al do not teach expressly an echo residue detection circuit.

Ishii et al teach using an echo residue circuit to detect residual echo level (191) for outputting a control signal to adjust the filter according to an echo residue received by the receiver [Fig. 4; col. 8, lines 56-65].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the echo residual detector of Ishii et al with Hauptmann et al in order to suppress the remaining echo further if the residue echo is above a threshold [Ishii et al; col. 9, lines 58-67].

Regarding claim 11, Hauptmann et al further teach the echo cancellation device, wherein the echo cancellation signal corresponds to the transmit signal [Fig. 1].

Regarding claim 12, Hauptmann et al further teach the echo cancellation device comprising a digital-to-analog converter (D/A) (2) [Fig. 1].

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hauptmann et al as applied to claim 1 above, and further in view of Ishii et al [US 5,960,077].

Regarding claim 6, Hauptmann et al do not teach expressly an echo

residue detection circuit.

Ishii et al teach using an echo residue circuit to detect residual echo level (191) for outputting a control signal to adjust the filter according to an echo residue received by the receiver [Fig. 4; col. 8, lines 56-65].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the echo residual detector of Ishii et al with Hauptmann et al in order to suppress the remaining echo further if the residue echo is above a threshold [Ishii et al; col. 9, lines 58-67].

9. Claims 13-15, 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hauptmann et al and Ishii et al as applied to claims 13, 6 above, and further in view of Ngo et al [US 5,694,474].

Regarding claim 13, the combination of Hauptmann et al and Ishii et al does not teach expressly the filter comprising a digital low pass filter.

Ngo et al teach an adaptive filter having a digital low pass filter [ col. 12, lines 44-50].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings for adaptive filtering of Ngo et al with Hauptmann et al and Ishii et al in order to replace a digital delay line with a digital low pass filter for an easy implementation in hardware.

Regarding claim 14, Ngo et al further teach echo cancellation device, wherein the digital low pass filter is a finite impulse response (FIR) filter and the FIR filter is adjusted through adjusting at least a coefficient of the FIR filter (i.e. adaptive filtering) [col. 6, lines 18-67; col. 18, lines 1-50] .

Claim 7 is essentially similar to claim 14 and is rejected for the reasons stated above.

Regarding claim 15, Ngo et al further teach echo cancellation

device, wherein the digital low pass filter is a infinite impulse response (IIR) filter and the IIR filter is adjusted through adjusting at least a coefficient of the IIR filter [col. 15, lines 19-35].

Claim 8 is essentially similar to claim 15 and is rejected for the reasons stated above.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hauptmann et al as applied to claim 1 above, and further in view of Ngo et al [US 5,694,474].

Regarding claim 4, the combination of Hauptmann et al and Ishii et al does not teach expressly the filter comprising a digital low pass filter.

Ngo et al teach an adaptive filter having a digital low pass filter [col. 12, lines 44-50].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings for adaptive filtering of

Ngo et al with Hauptmann et al and Ishii et al in order to replace a digital delay line with a digital low pass filter for an easy implementation in hardware.

11. Claims 16-17, 20-22, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hauptmann et al and Ishii et al as applied to claims 10, 6 above, and further in view of Sallaway et al [US 6,980,644 B1].

Regarding claim 16, the combination of Hauptmann et al and Ishii et al does not teach the echo canceller, wherein the filter further comprises a RC network filter.

Sallaway et al teach an echo canceller, wherein the filter comprises a RC network filter [Fig. 3; col. 8, lines 13-38; col. 3, lines 1-14].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Sallaway et al with

Hauptmann et al and Ishii et al in order to create a variable impedance to cancel signal echoes [Sallaway et al; col. 3, lines 6-11].

Regarding claim 9, Sallaway et al further teach the echo cancellation device, wherein the filter is a resistor-capacitor (RC) network low pass filter and the characteristic is the resistance of the resistor or the capacitance of the capacitor [Fig. 3; col. 8, lines 13-38].

Regarding claim 17, Sallaway et al teach the echo canceller, wherein the RC network filter further comprises a resistor [Fig. 3; col. 8, lines 13-25].

Regarding claim 20, Sallaway et al teach the echo canceller, wherein the RC network filter comprises a capacitor [Fig. 3; col. 8, lines 26-38].

Regarding claim 21, Sallaway et al teach the echo canceller, wherein the capacitor comprises a parasitic capacitor [Fig. 3; col. 7, lines 40-46].

Regarding claim 22, Sallaway et al teach the echo canceller,

wherein the RC network filter is adjusted through adjusting the capacitance of the capacitor [Fig. 3; col. 8, lines 26-39].

### ***Allowable Subject Matter***

12. Claims 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 18 recites an echo canceller and limitation for the following: "wherein the resistor is implemented by a MOS transistor". The prior art of record does not teach this limitation in the context of the claim.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on 571-272-7547. The

fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh  
Examiner  
Art Unit 2614

A handwritten signature in black ink, appearing to read 'Ramnandan Singh', with a horizontal line underneath.